DOCUMENT RESUME

ED 113 297 SP 009 531

AUTHOR	Lowery, Lawrence F.
TITLE	Learning about Instructing: Questioning Strategies.
INSTITUTION	California Univ., Berkeley. School of Education.
SPONS AGENCY	National Science Foundation, Washington, D.C.
PUB DATE	74
NOTE	66p.; For related documents, see SP 009 532-534
AVAILABLE FROM	University of California, School of Education, Berkeley, California 94720 ($3.00)
EDRS PRICE	MF-$0.76 HC-$3.32 Plus Postage
DESCRIPTORS	Audiovisual Instruction; Classroom Techniques; Individualized Instruction; *Inquiry Training; Instructional Materials; *Questioning Techniques; *Teaching Guides; Teaching Methods; *Teaching Techniques; Video Tape Recordings

ABSTRACT

This self-instructive workbook focuses upon teacher-initiated questioning strategies and the relationship of the strategies to students' thinking. It utilizes written materials, audiotapes, videotapes, and students in the classroom. The goals of the workbook are to enable the teacher to (1) identify and classify types of questions in terms of their potential effect on students' thinking; (2) use each type of question strategically so as to facilitate the development of students' thinking processes; and (3) assess themselves in terms of knowledge and ability related to questioning strategies. The workbook is supplemented by a program and support system which includes instruction, experiences for practice, and individual conferences. The guide defines types of teacher-initiated questions and types of written questions and explains how to make a statistical profile of scored questions. It also discusses the classification of questions from a transcript and questions from an audiotape. In addition, it helps the teacher in assessing questioning strategies, in relating types of questions to instructional goals, in sequencing questions strategically, and in matching types of questions to learning processes. It also provides a review of research on the use of questions in instruction and a bibliography. (BD)

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LEARNING ABOUT ..... SERIES

Developed by

Lawrence F. Lowery

Contributors

Paul Ammon
Nancy Brace
Lynne Carter
Henry Cleveland
Mary Collins
Paul Echols
Beth Goldman
Phil Loggins
Olga Hemmingway
Hermine Marshall
John Matlin
David Miller
Ken Peterson
Rich Ponzio

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learning about instruction: questioning strategies

A PERSONAL WORKSHOP

by

Lawrence F. Lowery

This self-directed, personal workshop focuses upon teacher initiated questioning strategies and the relationship of the strategies to students' thinking. Although you will learn many ideas and develop various skills from experiencing this workshop, three major goals are identified below.

As a result of this workshop, you will be able to:

1. identify and classify types of questions in terms of their potential effect upon students' thinking.

2. use each type of question strategically so as to facilitate the development of students' thinking processes.

3. assess yourself in terms of knowledge and ability related to questioning strategies.

This workshop is self-instructive. It utilizes written materials, audiotapes, videotapes, and students in your classroom. It is supplemented by a program and support system which includes instruction, experiences for practice, discussions, and individual conferences.

This book on Questioning Strategies is one of several being developed under the general heading *"Learning About ... Series"* by the University of California Cooperative Teacher Preparation Project (UCCTPP). The total series is composed of three sets of books on three educational themes: *The Learner, Instruction, The Curriculum.*

The project, an alternative instructional model for teacher education, is being implemented through cooperation of the School of Education of the University of California, Berkeley, the Lawrence Hall of Science, and the Mount Diablo and Vallejo Unified School Districts. Approximately 45 beginning teachers, both elementary and secondary, spend one year of pre-service preparation and their first two years of classroom teaching within the program. The project represents an effort to manage a much larger portion of the beginning teacher's experience than has hitherto been attempted. One major objective of the project is to assist new teachers and the experienced teachers working with them in becoming regular evaluators of their own instruction. Participants in the program are taught to use materials and techniques that help assess stages of intellectual development in students, to identify and prescribe learning activities commensurate with their students' intellectual development, and to use techniques for assessing their interactions with students. The research objective of the project is to determine the effectiveness of the model program in developing the instructional style of beginning and experienced teachers.

The *"Learning About ... Series"* is being developed through the resources of the School of Education and the Lawrence Hall of Science, University of California, Berkeley. The research dimension is being funded through a grant from the National Science Foundation.

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Effective questioning is but one of several processes which can help learning to take place. Questions may be initiated and controlled by the teacher (as in most classrooms) or may be initiated by the students (as in inquiry development programs). This book considers only the teacher initiated and controlled questions.

Research indicates that teacher initiated questions can be valuable in enabling students to learn and to develop ways to learn. When properly phrased, questions can motivate and sustain interests, develop and modify attitudes, stimulate thinking, facilitate fresh ways to deal with ideas and problems, and elicit certain cognitive processes such as recalling, inductive and deductive reasoning, and speculating.

WIZARD OF ID —By Parker and Hart

AFTER MY SPEECH, WE WILL HAVE A QUESTION AND ANSWER PERIOD FOR THE PRESS
HOO RAY
YEA
IT'S ABOUT TIME
CLAP CLAP CLAP CLAP
CLAP CLAP CLAP CLAP
CLAP CLAP CLAP CLAP
IF YOU FAIL TO ANSWER THE QUESTIONS, I WILL GIVE THE SPEECH AGAIN.

Part of the art of instruction is to select and use questions that directly affect the thinking skills of students while avoiding questions that are trivial, misleading, confusing, or manipulative.

This personal workshop will help you improve the effectiveness of your questions through insights into the ways you can actually use questioning strategies with your students. Briefly, the method used in this workshop is to introduce you to several types of questions, provide different ways for you to develop and practice your ability to identify each type, then show you how to draw simple maps or profiles that somewhat objectively describe your own questioning strategies with students.

Begin with Workshop A in the next section, and continue through the subsequent self-instructional workshops at your own pace.

WORKSHOP **A**

defining types of teacher initiated questions

The purpose of this self-workshop is to provide definitions for the different types of questions that teachers might ask in instructional situations. At the end of this workshop, you should be able to recall the basic types.

A question is a question is a question until one recognizes differences among them. Some questions are narrow — they structure the learning situation toward a planned, specific goal. Some questions are broad — they structure the learning situation toward unplanned, divergent outcomes. Other questions are independent of the learning situation in that they are not directly related to the purposes of the instruction.

Your skill at questioning depends upon your familiarization of a few basically different types of questions that might be asked in instructional settings. These types are defined on the following pages.

1. Narrow Questions

A narrow question has a certain "correct" answer related to it; when a teacher asks a narrow question, the teacher is hoping for a planned, convergent outcome. There are two types of narrow questions: direct-information questions and focusing questions.

a. Direct-information Questions

These questions require the student to recall information or to recognize information that is readily at hand.

Examples:

"When was the steam engine invented?"

"What is the largest city in California?"

"What did we find out about that yesterday?"

"What kind of animal is this?"

"According to the chart, how many natural elements have been found on earth?"

"What national parks have you visited?"

Such questions are useful if you want the student to recall a fact, define a term, identify something, or give an answer that has been learned by rote memory. Who, what, where, when, how much, how many, and the like are direct-information questions when the student is asked to recall the information or when the information is at hand.

Responses to direct-information questions will often be one word or short answers. To respond, the student must be able to remember or recognize information.

As part of a strategy, direct-information questions can be used to reestablish what has gone on in a previous experience or to establish a base of information upon which new knowledge will depend. These questions are generally effective at the beginning of a lesson to "set a stage" or at the end to "bring out" or reemphasize key points and/or bring about closure on an idea or topic.

b. Focusing Questions

These questions require the student to develop a particular idea or answer by leading him toward it through clues as to what the answer is or cues as to appropriate methods of obtaining the answer.

Examples:

"How does this give you an idea about how the plant carries on the process of photosynthesis?"

"If leather rots quickly in moist ground, what do you conclude about the soil conditions when scientists find remains of leather footwear in an excavation site?"

"In what way is the Spanish language like the Italian language?"

"What can you say about the charges of these two electrically charged balloons which are attracting each other?"

Such questions are useful if you want the student to compare, contrast, associate, explain, or state relationships. Who, what where, when, how much, how many, and the like can be focusing questions when the information is not available and the answer must be derived through clues or a process of analysis and induction.

To respond to focusing questions, the student must know certain facts, be able to associate and put them together, and give an explanation in his own words.

As part of a strategy, focusing questions can be used to guide the student toward a particular idea that you have in mind but that you want the student to develop in his own terms.

2. Broad Questions

A broad question has at least several different acceptable responses related to it; when a teacher asks a broad question, the teacher is hoping for unplanned, divergent outcomes. There are two types of broad questions: open-ended questions and valuing questions.

a. Open-ended Questions

These questions allow the student to explore freely in his own terms, without restrictions and with only minimal guidance by the teacher.

Examples:

"What might another explanation (or answer) be?"

"What could be done to solve this problem?"

"What other factors might be involved?"

"What predictions can you make about what is going to happen?"

"How can we go about deciding which is better?"

Such questions are useful if you want to encourage the student to synthesize ideas, hypothesize and develop a meaningful solution, deduce and predict, or organize elements into a fresh pattern that was not clearly recognized before.

Responses to open-ended questions are rarely predictable, and the method of investigation is the responsibility of the student.

As part of a strategy, open-ended questions can broaden the field of study being pursued or structure it without indicating the nature of the response(s) or the appropriate method for obtaining the solution(s).

b. Valuing Questions

Valuing questions ask the student to make a cognitive or an affective evaluation or to explain the criteria used in making such an evaluation.

Examples:

"What makes you like the first poem better than the second poem?"

"Why do you say this is the best order for arranging these objects?"

"Why would you like or not like to live in England?"

"What do you think about the accuracy of the author's conclusions?"

"What is your opinion of the government's decision to . . .?"

"How do you feel about . . .?"

"What do you think about . . .?"

"How did you feel when . . .?"

Such questions are useful if you want the student to organize knowledge, formulate an opinion, take a self-selected position, share feelings, or become aware of his feelings or the feelings of others. Valuing questions might require justification of a choice, defense of a position, or evidence for a judgment.

To respond to valuing questions, the student must use combinations of operations used for other types of questions. For example, the student must recognize or recall bits of information, note relationships among the bits, then synthesize and analyze them before evaluating.

3. Miscellaneous Questions

Questions that are not directly related to the topic of instruction, such as requests for assistance or compliance, and questions that do not develop the student's thinking, such as rhetorical questions, can be identified as miscellaneous questions.

Examples:

"Can everyone hear?"

"Will you please raise your hand if you wish to speak?"

"Shall we begin the test?"

"Should we make a list of these on the board?"

"Mammals can be identified by the hair or fur on their bodies, can't they?"

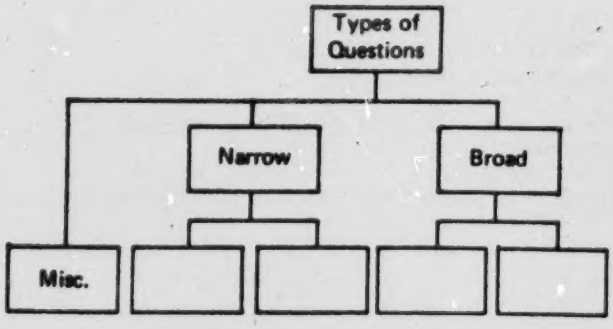
"That is true for most of us, isn't it?"

"How many of you would like to try this?"

Any question can function rhetorically when the teacher supplies the answer or when the question is not followed by enough time for students to respond.

Now fill in the blank boxes in the hierarchy of questions shown below by recalling the four basic types of questions described on the previous pages.

See if you can also provide a definition for each of the boxes.



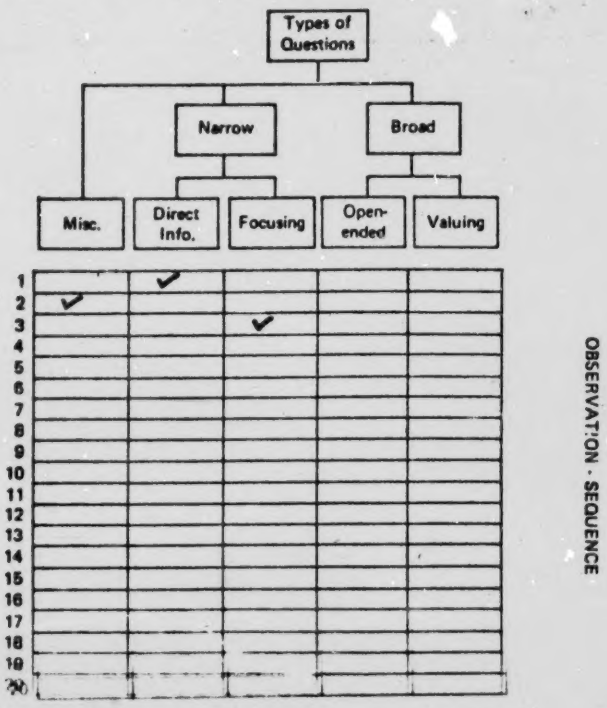
WORKSHOP **B**

identifying types of written questions

> *The purpose of this self-workshop is to provide you with the means to practice identifying questions. Following this workshop, you will be able to identify and classify five types of questions from a listing of written questions.*

A matrix, like the one shown below, can be used to identify questions conveniently. This matrix will be used throughout this book. To indicate how it can be used, the following three examples have been scored on it.

1. *"Which planet is closest to the sun?"*
   (Direct-information Question)
2. *"Shall we look at our books to find the answer?"*
   (Miscellaneous Question)
3. *"What would happen if you turn the handle to the right?"*
   (Focusing Question)



A practice set of written questions and a matrix are presented on the next two pages. Try to identify the types of questions and mark them on the matrix.

Although you can't detect inflections in written questions, you can identify the questions at your own pace; thus, you will have time to think carefully about the different types.

Workshop Guideline

A strategy that you might find helpful when trying to identify and classify questions is to decide first whether the question is miscellaneous, narrow, or broad. Then, if it is a narrow question, decide whether it is direct-information or focusing; if it is a broad question, decide whether it is open-ended or valuing.

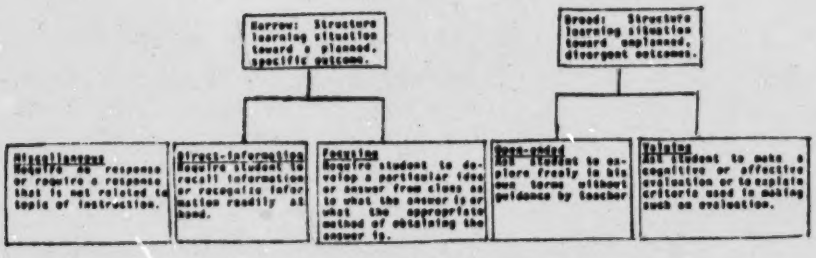
When deciding between direct-information and focusing or between open-ended and valuing questions, you may find it helpful to analyze what type of thinking each question requires — whether 1) recall or recognition of information, 2) analysis of cues and induction to arrive at a particular answer or idea, 3) free and undirected investigation, or 4) evaluation.

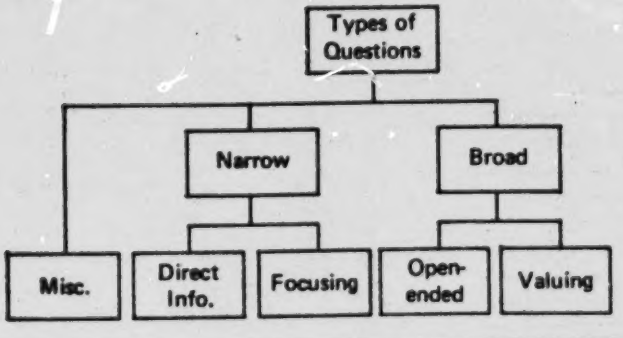
PRACTICE QUESTIONS

1. *"Is honesty important or not?"*
2. *"Who will close the window?"*
3. *"The word "product" is the name given the answer to what kind of arithmetic problem?"*
4. *"If distance is increased between the two masses, looking at the formula, what do you think will happen to the force?"*
5. *"A verb is a word that expresses action, right?"*
6. *"What could be done to solve the problem?"*
7. *"What do you like best about Thanksgiving?"*
8. *"Now let us think about the film we just saw. What are some of the similarities among different tribes' ceremonial behaviors after planting crops?"*
9. *"How did you feel when you weren't chosen?"*
10. *"Suppose you had been the girl in the story; what would you have done to help the old man?"*
11. *"What do we call this?"*
12. *"When you repeat this experiment, what things do you plan to do in order to make your results more accurate?"*
13. *"The shortcuts you have learned for multiplying by ten are useful, aren't they?"*
14. *"Which do you think is best to use?"*
15. *"What happens to the answer of a three-part multiplication problem like 21 x 53 x 46 when the numbers are placed in reverse order?"*
16. *"What are the names of the three branches of the Federal Government?"*
17. *"Here is a map showing only the transportation routes in a country. Where are the three most important cities in this country?"*
18. *"How much of the earth's surface is covered with water?"*
19. *"Which group wants to make its presentation first?"*
20. *"How might we find out?"*

PRACTICE MATRIX

SYNOPSIS OF CATEGORIES





1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
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16					
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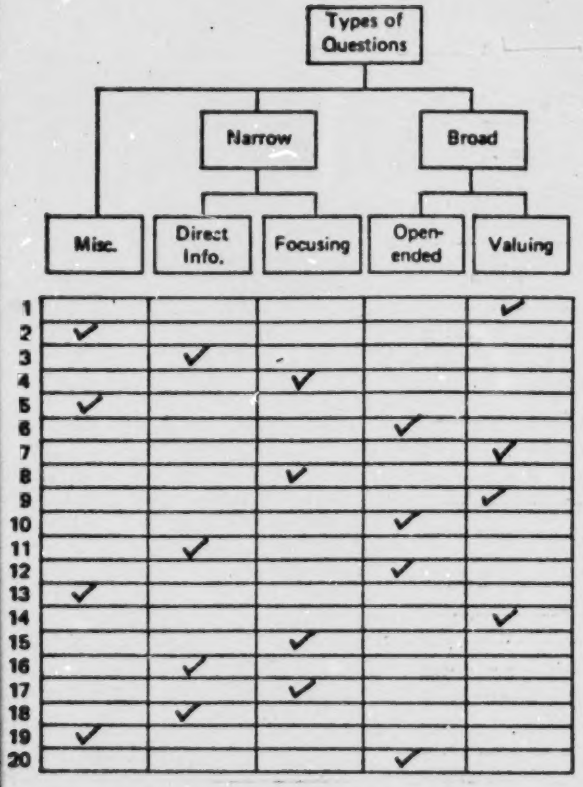
20					

Now that you have identified and classified the written questions, you might like to see how someone else classified them.

To find out, turn the page

ANALYSIS OF PRACTICE QUESTIONS

Here is how the UCCTPP staff identified the set of written questions. If the scoring raises some questions in your mind, please note them in the margins, then talk to a staff member about them.



	Misc.	Direct Info.	Focusing	Open-ended	Valuing
1					✓
2	✓				
3		✓			
4			✓		
5	✓				
6				✓	
7					✓
8			✓		
9					✓
10				✓	
11		✓			
12				✓	
13	✓				
14					✓
15			✓		
16		✓			
17			✓		
18		✓			
19	✓				
20				✓	

1. Valuing. Asks for an opinion.
2. Miscellaneous. Deals with classroom management rather than with content of lesson.
3. Direct-information. Asks student to recall part of a definition.
4. Focusing. Gives clues (*"looking at the formula"*), asks student to analyze and arrive at a particular idea.
5. Miscellaneous. No answer expected.
6. Open-ended. Calls for free exploration of the problem.
7. Valuing. Asks student for an affective judgment.
8. Focusing. Asks student to analyze clues (scenes in the movie) and to develop particular ideas in his own terms.
9. Valuing. Asks for feeling.
10. Open-ended. Asks student to explore freely and come up with novel solutions to a problem
11. Direct-information. Asks student to recall the name of something.
12. Open-ended. Asks student to solve a problem; gives no clues.
13. Miscellaneous. No answer expected.
14. Valuing. Asks for a judgment.
15. Focusing. Expects student to arrive at a particular idea through analysis.
16. Direct-information. Asks for recall of facts.
17. Focusing. Asks for analysis of clues (from a map) to obtain a correct answer.
18. Direct-information. Asks for recall.
19. Miscellaneous. Deals with classroom procedure rather than content of lesson.
20. Open-ended. Calls for free exploration.

WORKSHOP **C**

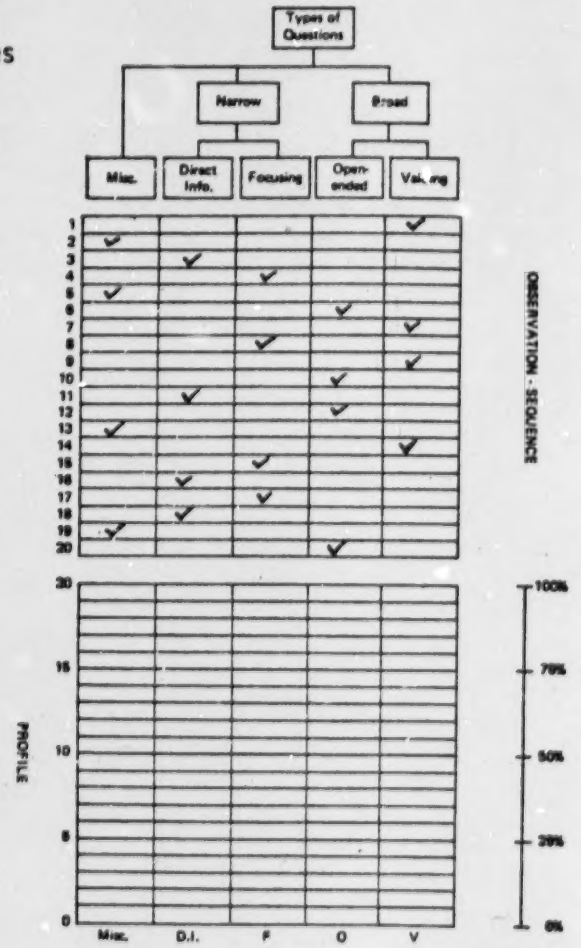
making a profile of scored questions

The purpose of this workshop is to provide you with a means for analyzing scored questions statistically. After this workshop, you will be able to bargraph scored questions and analyze them in terms of percentages.

One good way to organize the information from a matrix so that trends and patterns can be readily recognized is to make a profile in the form of a bar graph.

Added to the matrix shown is a form that may be used to construct such a profile conveniently. To use this form, simply darken the corresponding number of spaces on the form. Note that when a sample interaction contains 20 questions, you can read the percent of total questions from the right side of the profile.

Use this form to practice constructing a profile of the questions you have just classified.



Some questions to ask yourself:

1. Were the sample questions balanced among types or was one type used more than any other?
2. How would the graph look if you wanted to have students express their feelings?
3. How would the graph look if you used questions to have students recall information they had studied?
4. What percentage of questions were focusing questions?

WORKSHOP **D**

classifying questions from a transcript (1)

The purpose of this workshop is to provide you with a means to practice identifying and classifying questions from a transcript. Following this workshop, you will be able to identify and classify five types of questions contained in a written transcript.

The following is a transcript of verbal interactions taken in an imaginary classroom. A numeral is placed after each question asked by the imaginary teacher. Identify the numbered questions on one of the assessment sheets found at the back of this book, then tally the types of questions on the graph to obtain a profile of the questions used.

DESCRIPTION OF SETTING
FROM WHICH TRANSCRIPT WAS MADE

Setting: 35 students arranged in rows facing teacher at front of room

Grade Level: Sixth

Topic: Social Studies unit on Mexico

Prior to the lesson, the students read about and researched information on one of the earliest civilizations that archeologists have found in Central Mexico. The teacher's goal for this part of the lesson was to have students recall factual information from their readings. The teacher intends to use this information to discuss what it would have been like to have lived in that civilization.

BEGINNING OF TRANSCRIPT

Teacher: *Would you please put your pencils down, put your spelling books away, and take out your social studies textbooks?* (1)

Class does what is asked.

Teacher: *Richard, will you tell us what page we were discussing yesterday?* (2)

Richard: *It was page 48.*

Teacher: *Thank you. Will everyone turn to page 48?* (3)

Students find page 48.

Teacher: *Yesterday we were discussing the photograph on this page. If I remember correctly, we were saying that the pyramids shown indicate that the pre-Hispanic civilization was quite advanced. How did the photograph indicate this to us?* (4)

Hermine: *The size of the stones used in the construction.*

Teacher: *Can you use the photograph to show us what you mean?* (5)

Hermine: *The stones are so large* (points to the stones) *it took some mechanical equipment, maybe levers and pulleys, to move and lift them. I guess some mathematics had to be used to do this too.*

Teacher: *Are you saying that because these early people knew mathematics and used simple machines, this indicates they were quite advanced?* (6)

Hermine: *Yes.*

Teacher: *What else did we learn from the photograph?* (7)

Ken: *We thought the people knew something about stars and planets.*

Teacher: *What indicated this to us?* (8)

Ken: *The pyramids are called the sun and moon pyramids, and they are built to face in certain directions.*

Teacher: *And what about their ability to design things?* (9)

Paul: *They were pretty good artists. You can see the carvings and paintings on their buildings.*

Teacher: *That's fine. This helps us remember some of the things we were talking about yesterday. At the end of yesterday's lesson, we had some questions we wanted to get more information about. One question was, "How long ago did these people live in this part of Mexico?" Did anyone find an answer?* (10)

Hands are raised.

Teacher: *Nancy, what did you find concerning when these people lived?* (11)

Nancy: *I checked two sources, and scientists aren't sure how old the civilization was. They do know that the civilization had disappeared from the area before the Aztecs arrived about 2000 years ago.*

Teacher: *What do you mean by disappeared?* (12)

Nancy: *They left the area without any trace. There are no signs that people were killed or died of sickness. They left all their buildings and things, but the people vanished.*

Teacher: *How did your references account for the disappearance?* (13)

Nancy: *One book said that there might have been a volcanic eruption nearby that ruined their fields so they couldn't grow anything. This forced the people to move away.*

Teacher: *What reference sources did you use?* (14)

Nancy: *The Word Book Encyclopaedia and our social studies book on Mexico.*

Teacher: *Did anyone else find other information on this question?* (15)

Hands are raised. Teacher points to Dave.

Dave: *I checked the Encyclopaedia Britannica, and it said the same thing.*

Teacher: *Scientists don't seem to know when the civilization existed, but they do know some things about how they lived. Although we haven't read about this yet, how do you think most people made a living in this civilization?* (16)

Larry: *Most people grew food. They were farmers.*

Henry: *Many of them made things. They carved wood, they wove blankets, and they made pottery.*

John: *They had big market places where they would trade the things they made and grew.*

Teacher: *Their life was certainly different from our's today. Suppose you could live in those early times. Based upon what you know, what do you think the life would be like for you?* (17)

Paul: *I wouldn't have liked it. It would have been too much hard work.*

Dave: *There wouldn't be any school because you would probably have to help grow and make things.*

Teacher: *Who would teach you how to do this if there were no schools?* (18)

Dave: *You would learn from your parents and family. Your home would be your school.*

Teacher: *What are some of the things you might enjoy doing?* (19)

Phil: *I think it would be fun to visit the market places, and I like to make things so I think it would be fun to make things to take to the market.*

Teacher: *Can you name some other civilizations we have studied that are similar to this one?* (20)

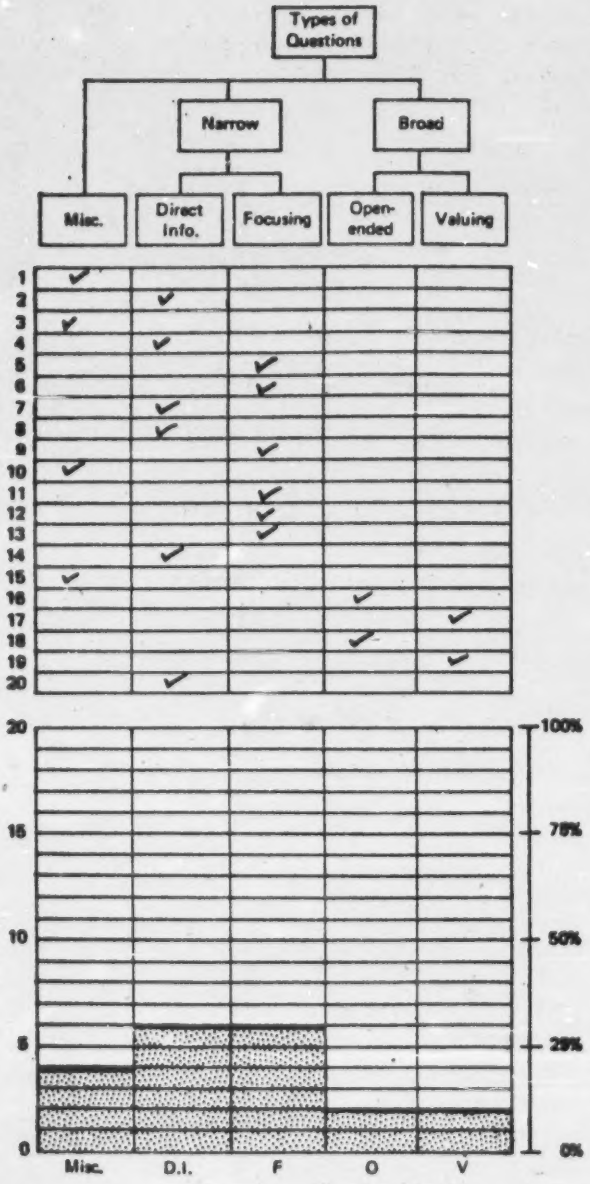
The class continues . . .

END OF TRANSCRIPT

If you would like to compare your identification of the questions with the identifications made by others, turn the page.

If you have any questions concerning the identifications, discuss them with any staff member.

ANALYSIS OF TRANSCRIPT (1) QUESTIONS



(1) Miscellaneous. No answer is expected. Also, the question does not pertain to the lesson, but simply is preparatory in getting the lesson started.

(2) Direct information. Asks for the recall of information.

(3) Miscellaneous. No answer is expected.

(4) Direct information. Asks students to remember what was discussed earlier.

(5) Focusing. Asks the student to utilize the photograph to clarify her statement in her own terms.

(6) Focusing. The teacher has rephrased ideas of the student and asks the student if they have been rephrased properly to focus upon the student's idea.

(7) Direct information. Asks for earlier information.

(8) Direct information. Asks for a more precise recall.

(9) Focusing. The teacher is cluing the students toward remembering other previously discussed information.

(10) Miscellaneous. Question does not develop students' thinking on the topic but is simply used to obtain information that indicates which students can be called upon.

(11) Focusing. This question continues to converge on the topic and the student can state her findings in her own words.

(12) Focusing. Asks for clarification in the student's terms.

(13) Focusing. This question continues to converge on the topic.

(14) Direct information.

(15) Miscellaneous. Question is used as an indicator, as in 10 above.

(16) Open-ended. Students have not yet studied this topic, thus, any response should be acceptable.

(17) Valuing. Asks students to express their judgment.

(18) Open-ended. There is no indication that a specific response is expected. The teacher will accept whatever the student says.

(19) Valuing. Asking for students to express their feelings.

(20) Direct information. Asks for recall.

Here are some questions to discuss with colleagues:

1. Did the teacher meet his/her goals in the transcript lesson?
2. Did the types of questions contribute to the lesson?

WORKSHOP **E**

classifying questions from a transcript (2)

The purpose of this self-workshop is to provide you with additional transcript material for practice.

If you would like more practice in identifying and classifying written questions, the transcript on the next two pages can be used.

A numeral is placed after each question asked by the imaginary teacher. Identify the numbered questions on one of the assessment sheets found at the back of this book, then tally the types of questions on the graph to obtain a profile of them.

DESCRIPTION OF SETTING FROM WHICH TRANSCRIPT WAS MADE

Setting: A conversation between a teacher and one student

Topic: The teacher (T) is trying to find out what the student (S) knows and how the student feels about cities.

BEGINNING OF TRANSCRIPT

T: *When someone says the word "city" to you, what do you think of?* (1)

S: *Buildings, movie stars, and lovely flowers.*

T: *How does a city smell to you?* (2)

S: *Well, it smells very pretty, but if it gets polluted it smells polluted.*

T: *What is a polluted city?* (3)

S: *It's where everybody just throws their trash around and throws ugly beer cans and wine bottles all over the city. They throw out their dirty trash and everything.*

T: *So you think a city is polluted when there's a whole bunch of trash around?* (4)

S: *Yeah.*

T: *What other things do you think about when you say "city?"* (5 — no pause) *Can you touch a city?* (6)

S: *Yes, you can.*

T: *In what ways?* (7)

S: *By just putting your hand down there and touching it.*

T: *What does a city feel like when you touch it?* (8)

S: *Kinda rough.*

T: *Kind of rough?* (9)

S: *It doesn't feel soft because the buildings are made rough on the outside and smooth on the inside.*

T: *What city are you from?* (10 — no pause) *What cities are you familiar with?* (11)

S: *I've been in Santa Monica, Concord, and Las Vegas.*

T: *Are those cities different in any way?* (12)

S: *Las Vegas is very different.*

T: *How is it different?* (13)

S: *Las Vegas is much prettier.*

T: *What do you mean by "prettier?"* (14)

S: *There's not much trash around and there are bright lights at nighttime. You go down the street and see all these lights. They are so pretty you want to smile, and I do.*

T: *In what city were you born?* (15)

S: *Santa Monica.*

T: *Where is Santa Monica?* (16)

S: *I don't know.*

T: *How does Santa Monica differ from Las Vegas?* (17)

S: *Santa Monica has a beach. I wish Santa Monica's beach was in Las Vegas.*

T: *Are you saying that you like Las Vegas more than you like Santa Monica?* (18)

S: *Yes.*

T: *How long did you live in Santa Monica?* (19)

S: *About 10 years. We've only lived here a year. I'm 11 now.*

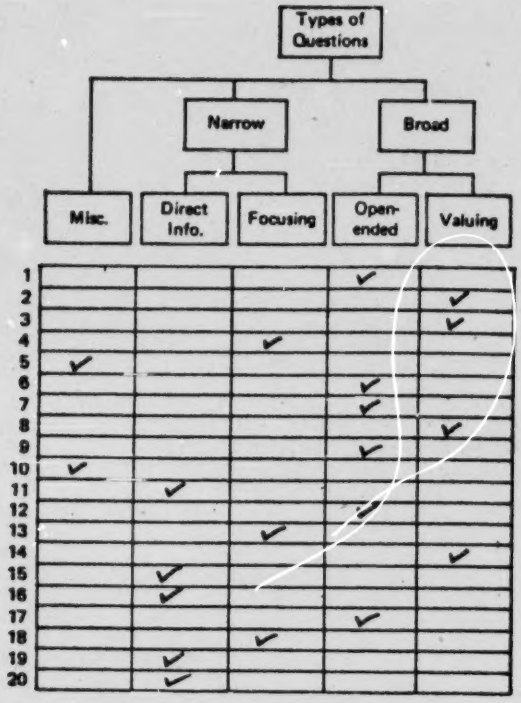
T: *How long did you live in Las Vegas?* (20)

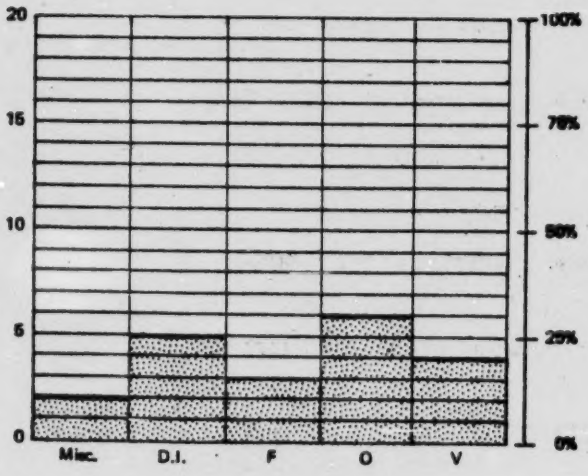
S: *I never lived in Las Vegas. We just visited there last summer.*

END OF TRANSCRIPT

To compare your identification of questions with the identification made by others, turn the page.

ANALYSIS OF TRANSCRIPT (2) QUESTIONS





(1) Open-ended. Invites free exploration.

(2) Valuing. Asks student to make a judgment.

(3) Valuing. Asks student to explain his criteria for the evaluation he made in response to the preceding question.

(4) Focusing. The teacher has rephrased the student's ideas and asks the student if they have been rephrased properly to focus upon the student's ideas.

(5) Miscellaneous. Not enough time is given for the student to respond.

(6) Open-ended. Invites free exploration.

(7) Open-ended. An extension of question 6.

(8) Valuing. Asks student to make a judgment.

(9) Open-ended. Teacher gives no indication that he wants a predetermined definition and asks the student to respond openly.

(10) Miscellaneous. Not enough time is given for a reply.

(11) Direct-information.

(12) Open-ended. Asks for free exploration; no particular answer is expected.

(13) Focusing. An extension of question 12.

(14) Valuing. Asks student to explain his criteria for the evaluation he made in response to the preceding question.

(15) Direct-information.

(16) Direct-information.

(17) Open-ended. Similar to question 12.

(18) Focusing. Teacher is rephrasing the student's idea. In rephrasing, there is a check on a value statement. Thus this question might also be classified as a valuing question.

(19) Direct-information.

(20) Direct-information.

Here are some questions to discuss with colleagues:

1. When is a profile, like the one made for these questions, appropriate?
2. How might the questioning be improved?

WORKSHOP **F**

classifying questions from an audiotape (1)

The purpose of this workshop is to provide you with the means to practice identifying and classifying questions from an audiotape. Following this workshop, you will be able to identify and classify five types of questions contained on an audiotape.

This self-checking experience is similar to those in the two preceding workshops. The main difference is that the audiotape has captured two additional dimensions of classroom interaction: the inflections of the speakers and the teacher's pauses that allow student responses.

As you listen to the interaction on the audiotape, classify each question you hear and record it on one of the assessment sheets at the back of this book. When this is done, construct a profile of the interaction.

Analysis of the questions is on the next page. You might like to check the way you classified the questions against the way the UCCTPP staff classified them.

ANALYSIS OF AUDIOTAPE (1) QUESTIONS

(1) *"Does anybody have any ideas on theories about how this thing works, maybe?"*
Open-ended. Student is asked to explore a problem, with minimal guidance.

(2) *"Can you think of a way we might gather some data to find out whether there's a vacuum inside or not?"*
Open-ended. Student is asked to generate ideas on his own.

(3) *"Understand what he's saying?"*
Miscellaneous. Not directly related to the content of the lesson, i.e. student is not asked to recall, deduce, synthesize, evaluate, etc.

(4) *"What would you expect to happen?"*
Open-ended. Asks student to make a predication without clues or guidance.

(5) *"And then what happens?"*
Open-ended. Asks student to repeat part of the hypothesis that he generated in response to open-ended question #1.

(6) *"How could we find out?"*
Miscellaneous. Not enough time allowed for response.

(7) *"What data do we need to know about to test your theory out?"*
Miscellaneous. Not enough time allowed for response.

(8) *"What's something you need to know?"*
Open-ended. No specific response is expected.

(9) *"How could you find out if the gas floats?"*
Open-ended. Asks student to generate a solution to a problem.

(10) *"You're doing an experiment in your head, aren't you, in this case?"*
Miscellaneous. No answer is expected.

(11) *"Now does that tell you that this gas is heavier than air?"*
Focusing. Asks students to analyze and interpret the data (balloon filled with gas would sink). (One tipoff that this is a focusing question -- there is one correct answer, but the question doesn't ask for recall or recognition of information.)

(12) *"What would happen if I were to fill a balloon with hydrogen gas?"*
Direct-information. Asks students to recall from previous experience.

(13) *"You still don't know whether it's lighter or heavier than air, though, do you?"*
Miscellaneous. No answer is expected.

(14) *"Now the fact that you observe the flame here and the gas coming out tells you that maybe its a little lighter than air, isn't it?"*
Miscellaneous. No answer is expected.

(15) *"Any other?"*
Open-ended. Repeat of the original open-ended question (#1).

(16) *"Do you understand what he's saying on this?"*
Miscellaneous. No time allowed for response and not directly related to the content of the discussion.

(17) *What's in air?"*
Miscellaneous. Not enough time allowed for response.

(18) *"What's the main gas that's in air?"*
Direct-information. Asks students to recall information.

(19) *"How many vote nitrogen?"*
Direct-information. An extension of question #18.

(20) *"How many vote oxygen?"*
Direct-information. An extension of question #18.

WORKSHOP **G**

classifying questions from an audiotape (2)

The purpose of this workshop is to provide you with additional audiotape material for further practice.

If you decide you would like more practice in identifying and classifying questions, you can use the second interaction that is recorded on the audiotape.

As you listen to the interaction on the audiotape, classify each question you hear and record it on one of the assessment sheets at the back of this book. When this is done, construct a profile of the interaction.

An analysis of the questions is given on the next page.

ANALYSIS OF AUDIOTAPE (2) QUESTIONS

(1) *"Where is that triangle form?"*
Direct-information. Asks student to recognize information.

(2) *"Anything else about the picture that Patty's made?"*
Open-ended. Asks student to explore freely.

(3) *"How about the size of her shape?"*
Focusing. Converges; asks student to develop an idea about a certain aspect(size) of the picture.

(4) *"What?"*
Miscellaneous. Unrelated to content. Asks student to repeat because the teacher didn't hear the reply the first time.

(5) *"What is it then?"*
Open-ended. Free exploration; any response would be acceptable.

(6) *"Why does it look like a boat?"*
Open-ended. Same as 5.

(7) *"Or when Patty had it turned this way, there were what?"*
Open-ended. Same as 5.

(8) *"Have you seen a lot of leaves before?"*
Direct-information. Asks student to recall information from his own experience.

(9) *"And a lot of sails?"*
Direct-information. Same as 8.

(10) *"Is there one thing you notice about leaves all on the same tree?"*
Focusing. The teacher has in mind an idea that she wants the student to come up with.

(11) *"And how about the sides, when the stem that runs down the middle of the leaf and then the little veins on each side?"*
Focusing. Teacher gives more clues to the idea she wants developed.

(12) *"Have you seen those, have you noticed those?"*
Direct-information. Asks for information from the student's experience.

(13) *"Have you noticed anything about the relationship of one side to another side?"*
Miscellaneous. No time allowed for response.

(14) *"Like Patty's this side, her petals, to this side, of her leaves to these leaves?"*
Focusing. Extension of questions 10 and 11. More clues are given.

(15) *"Do you know a word for something that's the same size and the same shape?"*
Direct-information. Asks student to recall a word.

(16) *"Ever hear that word, symmetrical?"*
Direct-information. Asks student to recall experience.

WORKSHOP **H**

assessing questioning strategies

The purpose of this workshop is to help you transfer your knowledge about questions and your skill in identifying them in such a way that the knowledge and skill become a useful tool in your own analysis of your instruction. Following several practice sessions guided by this workshop, you will be able to assess your own instructional questioning strategies.

Make one or more audiotape recordings of instructional sessions where you are deliberately using questions. The interactions you record can be done with any size group of students.

Select a five- to ten-minute segment from each recording (long enough to contain about twenty questions), identify and classify your questions on one of the assessment sheets at the back of this book, then construct a profile.

When finished, ask yourself a few questions about the questions you used during your lesson:

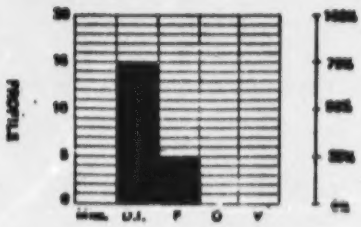
1. Did the types of questions I used contribute to the lesson?
2. Were my questions all of one type or did I use a variety of questions? What percentage was there of each type?
3. How might my questions be improved?

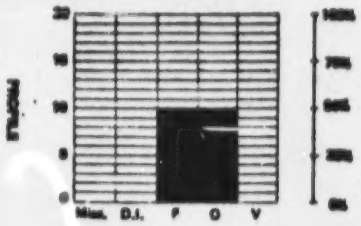
WORKSHOP I

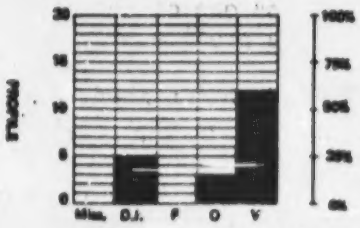
matching strategies to instructional profiles

> *The purpose of this workshop is to provide you with more practice ideas.*

Shown below are three different profiles from three different lessons given by teachers. Select one or more of the profiles and deliberately try to incorporate a series of questions in an instructional setting to match the profiles. Audiotape your attempt, then use one of the assessment sheets at the back of this book to check yourself.







Some questions to ask yourself:

1. Was the profile I selected to try, appropriate to the lesson I taught?
2. Was I capable of asking particular types of questions when I wanted to?

WORKSHOP **J**

matching goals to questions

The purpose of this workshop is to give you the opportunity to relate types of questions to instructional goals. After this workshop, you will be able to judge the value of questions in terms of their effect upon students' thinking.

Listed below are three questions asked by teachers in particular instructional situations. It is impossible to really know each teacher's reasons for using a particular question, but it is possible for you to speculate on the reasons.

Use your careful judgment to answer each of the questions below. On the following page you can check your perceptions to those of the UCCTPP staff.

1. Following an assignment which required students to read about the life of Einstein, the teacher asks: *"In what year was Einstein born?"* What type of question was asked? For what outcome in students' thinking might the teacher ask this question?

2. Upon returning from a field trip to a zoo, the students are asked: *"What were some of the animals you saw?"* What type of question was asked? For what reasons related to thinking might the teacher ask this question?

3. Following a film on migratory birds, the teacher asks the students: *"What are the major factors influencing migratory paths?"* What type of question was asked? For what reasons or goals related to students' thinking might the teacher ask such a question?

ANALYSIS OF QUESTIONS RELATED TO STUDENTS' THINKING

Listed below are some possible interpretations that might be given concerning the questions listed on the previous page.

1. This question is narrow and requests direct information. The student is expected to recall specific factual information that the teacher has in mind. (The student will do some convergent thinking). In addition to this outcome in a student's thinking, the teacher might have sought to find out if the student read the assignment.

2. This question is broad and open-ended. The teacher does not give any indication that a particular answer is sought. The student is expected to freely name or describe any animals that come to mind. (The student will do some divergent thinking). The teacher might also be seeking information on the general range of observations made by students while at the zoo.

3. This question is narrow and asks the student to focus upon a particular part of the film just seen. The student is expected to identify and describe factors that the teacher probably has in mind, but the student can state them in his own terms.

WORKSHOP **K**

classifying questions on your own videotape

The purpose of this workshop is to help you transfer your knowledge about questions and your skill in identifying them so that they become a useful too in your own analysis of your instruction. Following several practice sessions, you will be able to assess your own instructional questioning strategies.

Make a videotape of a session where you are deliberately using questions. The interaction you record could be with any size group of students.

Select a five- to ten-minute segment of this videotape (long enough to contain about twenty questions), categorize your questions on one of the assessment sheets at the back of this book, and construct a profile of your lesson.

WORKSHOP **L**

sequencing questions strategically

> *The purpose of this workshop is to help you further your ability to use questions effectively. After this workshop, you will be able to consciously sequence questions to move students toward convergent or divergent thinking.*

It is possible to influence the quality and direction of student thinking using questioning strategies. This can be done by consciously shifting the types of questions so as to move students from convergent to divergent or divergent to convergent thinking when appropriate.

In the examples below, consciously shift the emphasis on thinking as indicated. You might discuss your strategies with colleagues.

1. Suppose you goal was to have students do more open-ended thinking. Starting with the narrow, recall question below, list a sequence of questions that will move students toward your goal.

   a. *"When was the Declaration of Independence signed?"*

   b. _____

   c. _____

   d. _____

   e. _____

2. Following the narrow, focusing question below, list a sequence of questions that will move students toward thinking in terms of values.

   a. *"What similarities are there between motorcycles and bicycles?"*

   b. _____

   c. _____

   d. _____

   e. _____

3. Suppose you had started a discussion with an open-ended question but found the students responding in vague and very general terms. You decide to shift them toward more specific thinking. List a sequence of questions that will move students toward such thinking.

   a. *"What are some variables that must be controlled if you want to see how long a pendulum will swing?"*

   b. _____

   c. _____

   d. _____

   e. _____

WORKSHOP **M**

using questions strategically

The purpose of this workshop is to help your further your ability to use questions effectively. Following this workshop, you will be able to purposefully move students toward convergent and divergent thinking in instructional settings.

In your classroom, practice sequencing questions to move students from narrow thinking to broader thinking and vice versa. Do this with specific reasons in mind.

Audio- or videotape yourself to see how well you can do this. An analysis of your skill to sequence questions related to students' thinking can be made by examining the observation sequence section on your personal assessment sheet. In the example below, it can be noted that the teacher moved students from thinking convergently to thinking divergently, then back again.

When practicing, always be sure your practice is appropriate to the lesson.

WORKSHOP **N**

matching types of questions to learning processes

> *The purpose of this workshop is to extend what you know about questions. Following this workshop, you will be able to match types of questions to specific learning processes.*

Certain questions can be used to elicit specific learning responses on the part of students. For example, a narrow, direct-information question might guide the student into observing to obtain information, as with the question: *"What color is this?"*

Listed below are seven thinking/doing learning processes. These are useful to keep in mind no matter what subject you are teaching.

Observing:	includes seeing, hearing, feeling, tasting, smelling, receiving.
Communicating:	includes verbal, non-verbal, written, and pictorial communication.
Comparing:	includes equating and making comparisons, both qualitative and quantitative.
Organizing:	includes classifying, grouping, ordering, sequencing, seriating, and sorting.
Experimenting:	includes formulating experimental hypotheses, controlling and manipulating variables, and relating space-time measurements.
Inferring:	includes synthesizing, abstracting, analyzing, recognizing patterns, predicting, generalizing, formulating explanatory models, and theorizing.
Applying:	includes using knowledge, choosing, and inventing.

The sequence of the thinking/doing learning processes roughly follows a range from simple to complex, from concrete to abstract, from concrete to formal operational thinking.

Now use the chart on the next page and try to match a question for each of the thinking/doing learning processes. A few have been done to get you started.

LEARNING PROCESSES	TYPES OF QUESTIONS			
	Direct-information	Focusing	Open-ended	Valuing
Observing	*"What color is it?"*	*"What color would best protect this animal in this environment?"*	*"What do you see?"*	*"Why or why not would these colors be attractive to you?"*
Communicating	*"How would you describe the Zebra's coloration?"*		*"What do you mean by...?"*	
Comparing	*"Which is larger?"*			
Organizing				
Experimenting				
Inferring				
Applying	*"Using the materials I gave you, how would you make...?"*			

WORKSHOP **O**

practicing questioning strategies

The purpose of this workshop is to help you transfer to classroom operation that which you have learned about questioning strategies and their relationship to specific learning processes. Your ability to do this will depend upon your practice.

Review different questioning strategies (Workshops L and M), then select a learning process (Workshop N) that you think is important to one or more of your students. Next, audio- or videotape yourself as you deliberately sequence your questions to achieve the goal you selected.

After assessing your tape, decide whether or not you need more practice. See how expert you can become with this instructional skill.

REVIEW OF SOME RESEARCH ON THE USE OF QUESTIONS IN INSTRUCTION

Questions that are carefully selected, properly sequenced, and asked at appropriate times have been recognized as central to the facilitation of learning since the time of Socrates (469-399 B.C.).

Socrates, one of the greatest instructors of all times, guided learning through a method of cleverly sequenced questions and conversation. To demonstrate his method, he chose at random a boy off the street. Although he had no previous knowledge of the boy's experiences, Socrates, using a series of questions, led the boy to demonstrate a geometrical theorem. Throughout history, other effective teachers have facilitated learning through the careful use of questions.

Much has been written about questions, but research studies on questioning as a means of teaching, both in instructional settings and in empirical investigation, are rare. Some of the more important ones can be organized into three categories: a) questions asked by teachers in instructional settings; b) written questions; and c) the effects of questions upon learning.

a. Questions Asked By Teachers In Instructional Settings

More than half a century ago, Stevens (1912) found that four-fifths of the school day was filled with teachers' questions and students' answers. Yamada (1913) estimated that two-thirds of the instructional time at school was taken up with teachers' questions and students' answers.

Apparently the instructional situation is much the same today. Flanders (1963) reports that two-thirds of the time in classrooms is spent in talk, two-thirds of the talk is done by the teacher, and two-thirds of the teacher talk consists of direct influence such as presenting information or opinion, giving directions, and criticizing. A study by Bellack and others (1963) confirms that teacher talk accounts for approximately two-thirds of the total time spent in verbal interaction. Floyd (1960), Schreiber (1967), and Moyer (1967) indicate that teachers tend to spend most of the teacher talk time asking questions. It was found that teachers ask questions at the rate of two per minute.

Several studies have specifically focused upon measuring the frequency of various types of questions asked in classrooms. An early investigation into the role of questions in education led Stevens (1912) to note a dominant emphasis on memory questions. He suggested that teachers talk too much and generally ask questions not geared to developing students' higher cognitive functions.

In a study of secondary school teachers, Adams (1964) found that the majority of questions asked were designed to elicit only memory of factual information. In a Far West Regional Laboratory study (1967), an analysis of teachers' classroom questions showed that the student activity ratio as measured by the number of words spoken by students during taped sessions was 29%, while the teacher activity ratio was 71%. A sample of 1,347 questions was evaluated

on a point system in this study. Fewer than 100 (7%) of the questions were judged capable of stimulating reflection, and only about 6% of the questions were judged likely to develop thinking. Classification of question types indicated that 42% were concerned with memory of specific facts, 23% were concerned with information of specific facts, 9% were direction giving, 8% asked for criticism or evaluation, and 3% required comparisons. The broad category of memory questions comprised 53.5% of the total number of questions.

Guszak (1967) identified six types of questions asked by teachers during reading instruction in grades 2, 4, and 6: 1) recognition questions 13.5%; 2) recall questions 56.9%; 3) translation questions .6%; 4) conjecture questions 6.5%; 5) explanation questions 7.2%; 6) evaluation questions 15.3%. Recognition and recall questions, when combined, represented nearly 70% of the questions asked by the teachers in this study.

During videotaped presentations in grades K through 3, Ruddell and Williams (1972) found that teachers used twice as many factual as interpretive questions. Of all the questions asked, 68% were at the factual level and 32% were at the interpretive level.

Lanier and Davis (1972) in a teacher training program designed to instruct teachers in how to formulate questions, found that prior to the program, two-thirds of the questions formulated by teachers were recall questions. Following the program, the proportion of factual questions was reduced while interpretive, critical, and creative questions increased significantly.

Other studies on the frequency with which various types of questions are asked by teachers (Bartolome 1969, Davis 1967, Moriber 1972, Sloan 1966, Tinsley 1971, and Wilson 1969) also indicate that teachers rely mainly on questions that seem to be

aimed at the lower levels of knowledge as described in Bloom's Taxonomy (1956). In these studies, memory questions or recognition and recall questions were found to account for 44% to 70% of the total questions asked.

b. Written Questions

Pfeiffer's (1965) examination of teacher-made tests for ninth-grade social studies and Davis' (1966) analysis of the questions posed in three social studies textbooks revealed a pattern of heavy emphasis upon lower level cognitive objectives and a general neglect of higher level objectives.

Rothkopf and Bisbicos (1967) compared the effect of question placement on retention. They found that questions placed at the ends of paragraphs produced facilitative effects. Frase (1968) found that *"post questions"* produced higher general retention. The advantage existed from the first paragraph. By way of interpretation he offered that post questions maintain pre-established reading skills rather than developing them anew.

In an earlier writing, Frase (1967) stated that *"short tests included with prose facilitate retention of specific and incidental information."* He offered mathemagenic behaviors as an alternate to cybernetic hypotheses in which questions must occur before the reading. He noted that questions before limit while questions after optimize mathemagenic behaviors.

Morasky and Wilcox (1970) investigated the relationship between question placement and the time required to process information. They found that questions before the paragraph reduced reading time.

Frase, Patrick, and Schumer (1970) found that the advantage consistently found for post questions was reduced as the motivation increased. A finding in this study that frequent questions reduce in-

cidental learning apparently contradicts an earlier finding by Frase (1968) to the effect that increased pacing of questions favored the post question group.

Dwyer (1970) studied the effect of written questions on learning from visual materials. He had previously determined that students who were shown detailed and realistic illustrations of the human heart while listening to an audiotaped lesson on the heart did not perform as well on a criterion test as did students whose audio lesson was supplemented by simple line diagrams. Hypothesizing that the more realistic drawings contained so many details that the students had difficulty attending to those details relevant to the learning task, he repeated his experiment but, before displaying each visual, he displayed a set of questions designed to point out the most relevant details of that illustration. The students were not required to answer the questions. He found that the addition of these questions to the learning program did not improve performance on the test.

A study of written questions was made by Hunkins (1968, 1969, 1970). He prepared two different sets of written study questions and answer sheets to be used with a social studies text in sixth-grade classes. One set contained mostly knowledge questions (87%) and the other contained more analysis and evaluation questions (48%). (NOTE: Hunkins' categories corresponded to those in Bloom's Taxonomy) Eleven classes (280 students) were divided into two groups, one of which used the knowledge questions for four weeks and one of which used the higher level questions for four weeks. At the end of the study period the students took two tests, one of which was an achievement test constructed by the researcher. It contained seven questions in each of Bloom's six categories: knowledge, comprehension, application, analysis, synthesis, and evaluation. The students who had worked with higher level written questions achieved signifi-

cantly higher total scores on this test than the students who had worked primarily with knowledge questions. Hunkins subsequently broke these completed tests down into six subtests, one for each category of questions. When the data were analyzed this way, he found that only for the evaluation questions on the test was there a significant difference in subscores between the two treatments. The other text taken by the students was a social studies inference test designed to measure four dimensions of critical thinking: inference, caution, overgeneralization, and discrimination. For each of these dimensions, the scores of students in the two treatment groups did not differ significantly.

The implications of the research on questioning in textbooks point to the advantage of a question position other than initial. Although the initial question may aid the reader in more effectively picking out an answer from prose, it does this at the expense of incidental learnings facilitated by questions interspersed in the narrative. A review of the research yields no information on questions which are contextual, that is, a part of the reading and not either beginning or ending it.

The mathemagenic behaviors, those which give rise to learning, offered by Frase (1968) would seem to indicate that questions offered in other than an initial position would have similar effects. Allen (1969) found that questions, memory level or higher order, at the end of a passage affect learning in a way similar to the same questions offered before the extended passage. He stated in a later writing (1970) that *"advance organizers"*, generalizations written on a higher level of abstraction than the narrative that follows, facilitate learning for higher ability students only. He also found no support for the theory that higher order questions result in greater retention of factual material.

It would seem that questions appearing in prose facilitate learning; that the facilitation is a result of the question's increasing

the alertness of the reader; that the effect is greater for students of lesser ability and motivation; that the effect applies to the retention of both specific and incidental material; and that the optimum placement for the question is other than initiatory.

c. The Effects Of Questions Upon Learning

Researchers who studied the influence of different levels of questions upon levels of students' learning have obtained mixed results. In Kleinman's study (1965), the oral questioning patterns of 23 seventh- and eighth-grade science teachers were observed. From these observations Kleinman identified the three teachers who asked the most critical thinking questions and the three who asked the fewest. A test on understanding science was given to the students of these six teachers. The results of the test led Kleinman to conclude cautiously *"that the high ability pupils in the seventh- and eighth-grades, who have teachers that ask critical thinking questions, have a better understanding of science, of scientists, and of methods of science than the same caliber pupils of teachers who do not ask critical thinking questions."*

In Ladd and Anderson's (1970) study of oral questions, ninth-grade earth science teachers participating in the same curriculum were each observed during pre-laboratory discussions. The researchers calculated the percentage of inquiry questions in these discussions and divided the forty teachers into two groups, the twenty *"higher inquiry"* and the twenty *"lower inquiry"* teachers. At the end of one subject matter unit, the students in these classes took a multiple choice test on the unit, the test contained 25 low inquiry and 25 high inquiry items. The scores of students who had higher inquiry teachers were significantly higher than the scores of students who had lower inquiry teachers.

Allen (1970), working with social studies materials, found no support for the theory that higher order questions result in greater

retention of factual material. The apparent contradiction may be resolved by the observation that Allen confined his comments to retention, while Kleinman did not limit herself to the quantifiable area of retention but moved closer to affective behaviors.

Summary

It seems clear that much of the average teacher's time is spent talking and that the teacher, when asking questions, does not use an extensive variety. The few types that are used tend to require students to think in terms of recall or memory. Textbooks and other written questions also perpetuate this pattern by predominantly posing recall questions. In terms of questioning patterns, most teachers and textbooks are alike.

This personal workshop book has introduced you to a breadth of questioning possibilities and encourages you to learn and become skillful and flexible in using different types. The result will be that your instructional pattern, in terms of questioning, will be significantly different from the pattern identified in most teachers. In addition, you will be able to extend the limited questions given in textbooks.

It is also clear that researchers are cautious in their statements concerning the effects of different types of questions. There is a small amount of evidence that suggests that open-ended or "higher level" questions produce better understanding. But there are also some contradictory findings concerning the effect of such questions upon retention. Most nonresearch literature favors a move toward open-ended and valuing

types of questions.

The philosophy of this program is that teachers should not necessarily use one type more than another, but that their goals should be the matching of questions to the immediate effect upon the learner during a lesson and that they evidence a balance among types of questions.

One problem researchers have had in studying questioning has been in the identifying or training of enough teachers who can consciously use different types. With the knowledge and skill you develop through this book, you may be able to provide some valuable knowledge concerning the effect of the different questions upon students and how they learn.

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QUESTIONING STRATEGIES ASSESSMENT SHEETS

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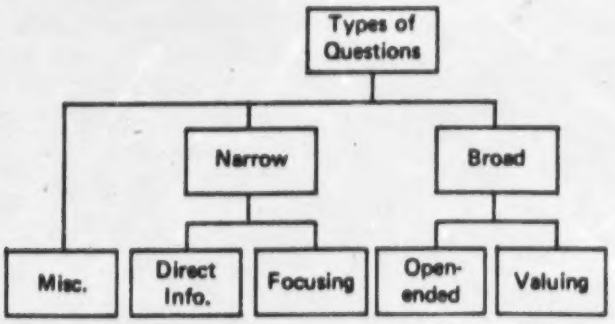

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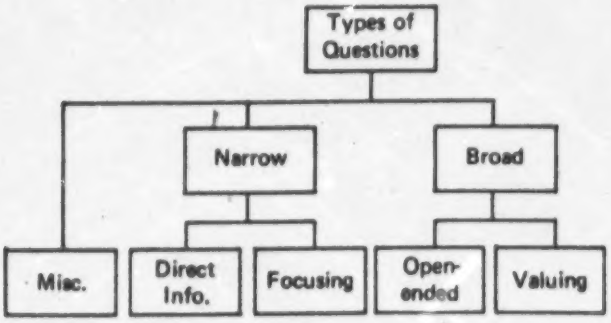

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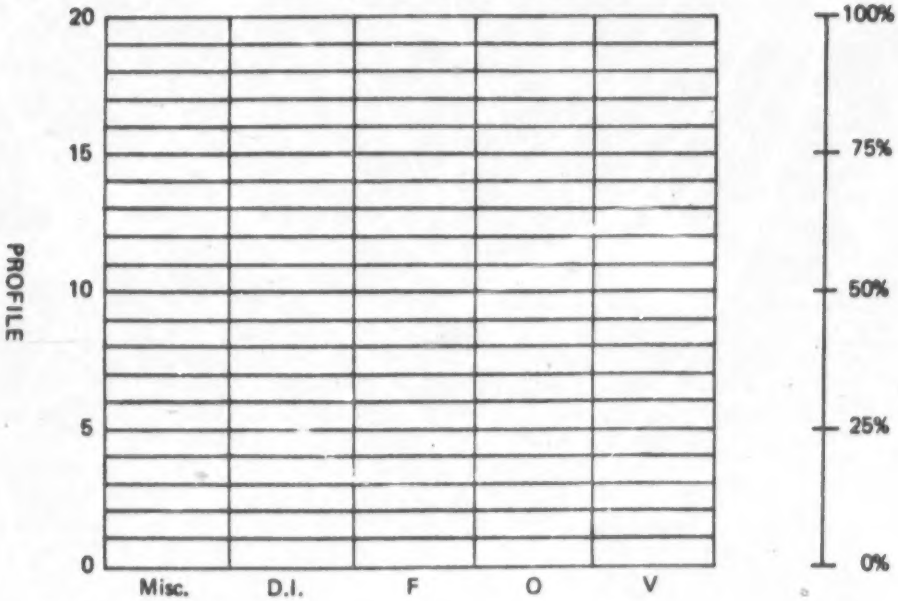

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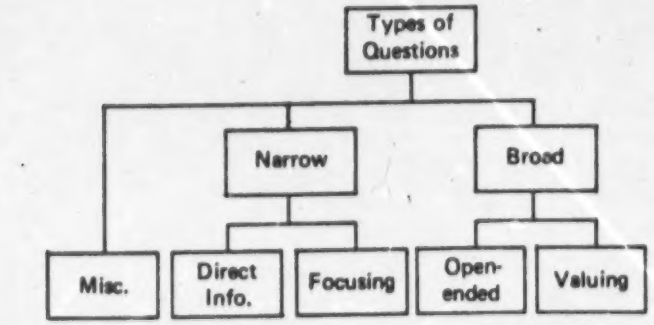

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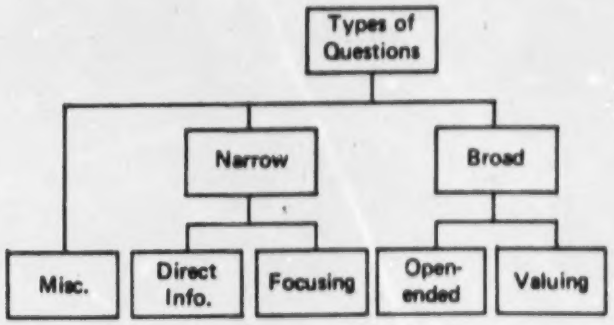

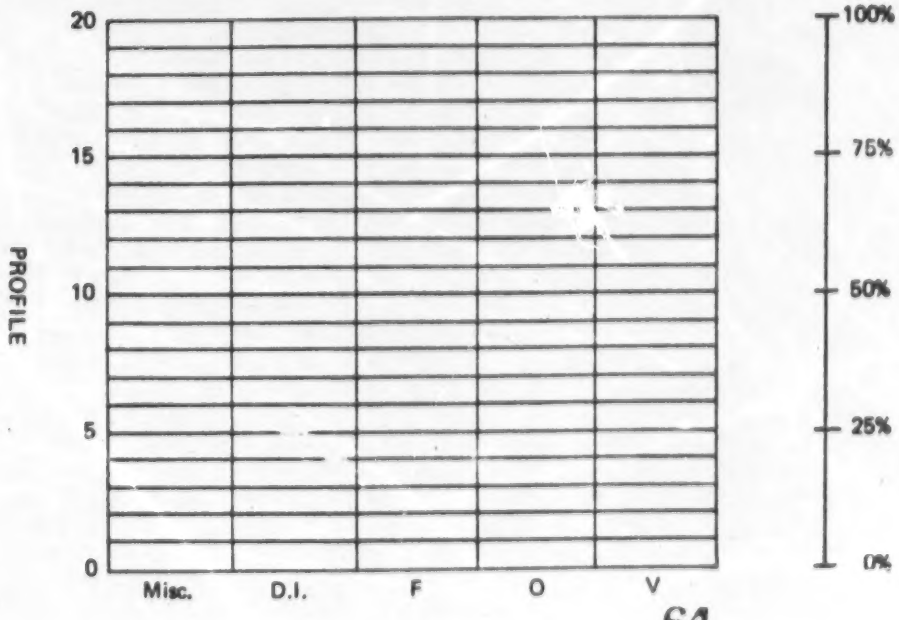

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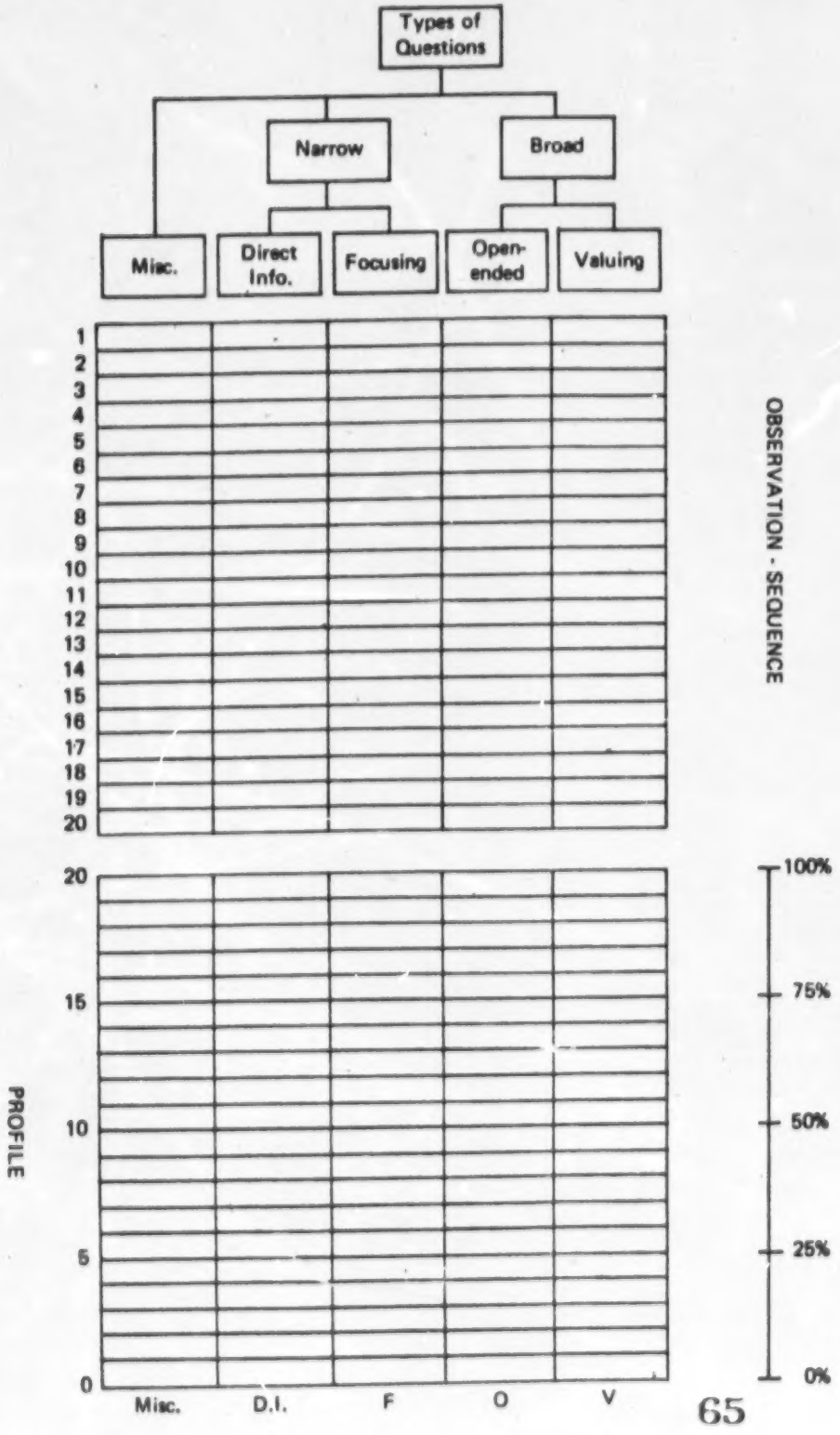

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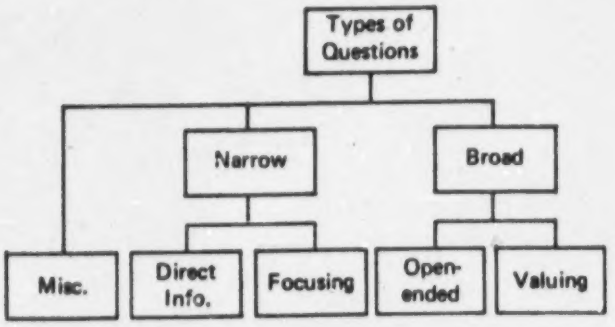

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